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# HOT WATER AND BEEF PLANS IN CHRONIC DISEASES.

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# THERAPEUTICAL

# DRINKING OF HOT WATER:

## ITS ORIGIN AND USE.

By EPHRAIM CUTTER, M. D.,

NEW YORK.

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# THERAPEUTICAL DRINKING OF HOT WATER:

## ITS ORIGIN AND USE.

BY EPHRAIM CUTTER, M. D., NEW YORK.

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THE therapeutical drinking of water at a temperature of blood heat to 150° Fahr. having become popular enough to call for an allusion to it in the London *Lancet* as a "valuable American contribution to medicine," and since it seems to be used at random from the directions of its distinguished introducer, I have thought that the origin and proper use of hot water should become history.

The practice dates back to 1858, when Dr. James H. Salisbury, of this city, concluded a series of experiments on feeding animals, to ascertain the relation of food as a cause and cure of disease.*

Among other things, he found that the fermentation of food

* Besides swine, he experimented on men. These he took in companies of six healthy laborers and placed under military discipline, which he enforced himself. He also ate and drank as they did. The men were kept on single articles of food, coffee and water. Among the articles were beans, beef, bread, chicken, crackers, fish, lobster, mutton, potatoes, oatmeal, rice, turkey. The blood, urine, and fæces of the animals were carefully examined microscopically and chemically, daily, without any preconceived idea to develop, but simply to ascertain facts and develop ideas from these facts.

In this manner he went through the whole range of foods, to show the permanent value of each when lived on exclusively and singly.

and the products of these fermentations were the chief primary factors in producing the diseases which arise from unhealthy alimentation. With the idea of removing these diseases by removing their causes, he employed hot water, in order to wash out the acetic, butyric, hydro-sulphuric, lactic, and saccharic acid and sulphide of ammonium fermentation vegetations — yeasts — from the stomach and intestines.

At first he tried cold water on his men to remove these products of fermentation. But cold water caused distress, pain, and colic. So he increased the temperature of the water. Lukewarm water made them sick at the stomach, and excited peristalsis upward. The temperature of the water was increased to 110° and up to 150° Fahr. This was well borne and afforded a feeling of agreeable relief which thousands since testify to. The hot water excites normal downward peristalsis of the alimentary canal, washes down the slime yeast, and bile through its normal channels, — washes out the liver and kidneys, and the bile is eliminated through the bowels, and not through the blood, *via* the kidneys.

It was some time before the proper times of administration and proper number of ounces of hot water, and the proper number of ounces to be drank at meals, could be settled, in order to obtain the best results. These directions may be found published in connection with the Salisbury plans for the treatment of consumption, Bright's disease, diabetes fibroids, sclerosis, and colloid diseases.

At the risk of repetition, for the sake of a more thorough understanding of the subject, these details will be plainly and simply given.

### DIRECTIONS FOR USING HOT WATER ACCORDING TO THE SALISBURY PLANS.

1. *The water must be hot; not cold or lukewarm.* — This is to excite downward peristalsis of the alimentary canal. Cold

water depresses, as it uses animal heat to bring it up to the temperature of the economy, and there is a loss of nerve force in this proceeding.

Lukewarm water excites upward peristalsis or vomiting, as is well known. By hot water is meant a temperature of 110° to 150° Fahr., such as is commonly liked in the use of tea and coffee. In cases of diarrhœa the hotter the better. In cases of hemorrhages the temperature should be at a blood heat. Ice-water is disallowed in all cases, sick or well.

2. *Quantity of hot water at a draught.* — Dr. Salisbury first began with one half pint of hot water, but he found it was not enough to wash out nor to bear another test, founded on the physiological fact that the urine of a healthy babe suckling a healthy mother (the best standard of health) stands at a specific gravity varying from 1015 to 1020. The urine of the patient should be made to conform to this standard, and the daily use of the urinometer tells whether the patient drinks enough or too much hot water. For example, if the specific gravity of the urine stands at 1030, more hot water should be drank, unless there is a loss by sweating. On the other hand, should the specific gravity fall to 1010, less hot water should be drank. The quantity of hot water varies usually from one half to one pint or one and a half pints at one time drinking.

The urine to be tested should be "the urina sanguinis," or that voided just after rising from bed in the morning before any meals or drinks are taken.

The quantity of urine voided in twenty-four hours should measure from forty-eight to sixty-four ounces. The amount will, of course, vary somewhat with the temperature of the atmosphere, exercise, sweating, etc., but the hot water must be given so as to keep the specific gravity to the infant's standard, to wit, 1015 to 1020. The urinometer will detect at once whether the proper amount of hot water has been drank, no matter whether the patient is present or absent

Another test is that of odor. The urine should be devoid of the rank "urinus" smell, so well known, but indescribable.

The Salisbury plans aim for this in all cases, and when the patients are true and faithful the aim is realized.

3. *Times of taking hot water.* — One hour to two hours before each meal, and half an hour before retiring to bed.

At first Dr. Salisbury tried the time of one half hour before meals, but this was apt to be followed by vomiting. One hour to two hours allows the hot water time enough to get out of the stomach before the food enters or sleep comes, and thus avoids vomiting. Four times a day gives an amount of hot water sufficient to bring the urine to the right specific gravity, quantity, color, odor, and freedom from deposit on cooling. If the patient leaves out one dose of hot water during an astronomical day, the omission will show in the increased specific gravity, as indicated by the urinometer, in the color, etc. Should the patient be thirsty between meals, eight ounces of hot water can be taken any time between two hours after a meal, and one hour before the next meal. This is to avoid diluting the food in the stomach with water.

4. *Mode of taking the hot water.* — In drinking the hot water it should be sipped and not drank so fast as to distend the stomach and make it feel uncomfortable. From fifteen to twenty minutes may be consumed during the drinking of the hot water.

5. *The length of time to continue the use of hot water.* — Six (6) months is generally required to wash out the liver and intestines thoroughly.

As it promotes health, the procedure can be practised by well people throughout life, and the benefits of "cleanliness inside" be enjoyed. The drag and friction on human existence, from the effects of fermentation, foulness, and indigestible food, when removed gives life a wonderful elasticity and buoyancy, somewhat like that of the babe above alluded to.

6. *Additions to hot water.* — To make it palatable, in case it is desired, and medicate the hot water, aromatic spirits of ammonia, clover tea blossoms, ginger, lemon juice, sage, salt, and sulphate of magnesia are sometimes added. Where there is intense thirst and dryness, a pinch of chloride of calcium or nitrate of potash may be added to allay thirst and leave a moistened film over the parched and dry mucous membrane surfaces. When there is diarrhœa, cinnamon, ginger, and pepper may be boiled in the water, and the quantity drank lessened. For constipation a teaspoonful of sulphate of magnesia or one half teaspoonful of taraxacum may be used in the hot water.

7. *Amount of liquid to be drank at a meal.* — Not more than eight ounces. This is in order to not unduly dilute the gastric juice or wash it out prematurely, and thus interfere with the digestive processes.

8. *The effects of drinking of hot water, as indicated, are* the improved feelings of the patient. The fæces become black with bile washed down its normal channel. This blackness of fæces lasts for more than six months, but the intolerable fetid odor of ordinary fæces is abated, and the smell approximates the odor of healthy infants suckling healthy breasts; and this shows that the ordinary nuisance of fetid fæces is due to a want of washing out and cleansing the alimentary canal from its fermenting contents. The urine is clear as champagne, free from deposit, on cooling, or odor, 1015 to 1020 specific gravity, like infants' urine. The sweat starts freely after drinking, giving a true bath from centre of body to periphery. The skin becomes healthy in feel and looks. The digestion is correspondingly improved, and with this improvement comes a better working of the machine. All thirst and dry mucous membranes disappear in a few days, and a moist condition of the mucous membrane and skin takes place. Ice water in hot weather is not craved for, and those who

have drank ice-water freely are cured of the propensity. Inebriety has a strong foe in this use of hot water.

9. *Summary of general considerations on the therapeutical drinking of hot water.*

(*a*) Foundation for all treatment of chronic diseases.

(*b*) Excites downward peristalsis.

(*c*) Relieves spasm or colic of the bowels by applying the relaxing influence of heat inside the alimentary canal, just as heat applied outside the abdomen relieves.

(*d*) Dilutes the ropy secretions of the whole body, and renders them less adhesive, sticky, and tenacious.

(*e*) Inside bath.

(*f*) Dissolves the abnormal crystalline substances that may be in the blood and urine.

(*g*) Necessary to have the hot water out of the stomach before meals.

(*h*) Use is to wash down the bile, slime, yeast, and waste, and have stomach fresh and clean for eating.

(*i*) Promotes elimination everywhere.

(*j*) If objection is made, it must be remembered that we are seventy-five per cent water.

(*k*) The gas that sometimes eructates after drinking hot water is not produced by the hot water, but was present before, and the contractions of peristalsis eject it; or, sometimes it is that the air is swallowed in sipping, as horses suck air. The amount of gas contained in the alimentary canal is larger than most are aware of, and yet it is not excessive, as it takes some time to eruct a gallon of gas from the stomach. This length of time can be tested by submerging a gallon jug filled with air under water and observing how long it will be in filling with water.

(*l*) Some physicians have advised against hot water, on the ground that it would "burn the coating off the stomach." If this is so, then a denudation of the lining of the stomach con-

tinuously for twenty-four years is compatible to a state of otherwise perfect health, with no sign of illness for that period of time, and is also compatible with the numerous cases that have occurred under the use of hot water as a foundation for treatment during the past twenty-five years. Again, the same physicians drink tea and coffee at the same temperature; and this act belies their warning and shows their inconsistency and want of consideration before speaking.

(*m*) These dicta about the therapeutic drinking of hot water were founded on the physiological experiments at the outset, verified in pathology and based on the experience derived from the treatment of thousands of cases since 1858. They are open, so that all who will may partake of this "water of life freely."

10. *Personal estimate of the founder of this practice.* "If I were confined to one means of medication, I would take hot water." "I have drank it for twenty-five years."

*Corroboration of the writer.* The writer testifies that his own personal experience and observation corroborate the truth of these statements of the Salisbury plans.

NEW YORK, May 30, 1883.

THE

# THERAPEUTICAL

# DRINKING OF HOT WATER:

## ITS ORIGIN AND USE.

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# ORIGIN OF THE SALISBURY PLANS

OF

# DIET IN CHRONIC DISEASES,

**With Directions for preparing Beef Pulp.**

BY EPHRAIM CUTTER, M. D.

## INTRODUCTION.

THE object of this paper is briefly to show the rise and progress of a new mode of alimentation, which has cured large numbers, and is beginning to command attention; to place the credit of its origin where it belongs; to point out that the order and arrangement of the principles of the system are based on extensive private and public investigations, some of them conducted under army medical officers of the United States of North America; and to prove, by references to published and unpublished papers, that there has been an effort to make known the results of these and other investigations, for the benefit of the medical profession (see Appendices E and F), so that no charge of concealment can lie against the founder of this system, and also that no one shall rob him of the honor of having made a series of observations on diet, careful, difficult, long, painful, and thorough, which are — I write advisedly — without a parallel in history, and whose results have removed some of the *opprobria medicorum* of the past.

Directions are also given for preparing beef pulp, according to the Salisbury Plans.

Corroborating statements will be found in the Appendices.

# DIET OF MAN. — NORMAL.

## PROPORTION OF ANIMAL TO VEGETABLE FOOD.

1858.

In 1858 the experiments in feeding, made by Dr. James Henry Salisbury, were sufficiently advanced to determine that the *normal* proportion of animal to vegetable food in the diet of well people is *by bulk*, — TWO THIRDS ($\frac{2}{3}$) ANIMAL TO ONE THIRD ($\frac{1}{3}$) VEGETABLE, or, to put it differently, ONE (1) MOUTHFUL OF FOOD FROM THE VEGETABLE KINGDOM TO TWO (2) MOUTHFULS OF FOOD FROM THE ANIMAL KINGDOM.

The writer testifies that his experience corroborates this proportion. (See Appendix A.)

This was also the time that Dr. Salisbury worked out the cause of the so-called "hog cholera," and found it to be due to the saccharic acid yeast fermentations of starchy and sugary food eaten in excess, *i. e.*, *soured swill*.

1861.

In 1861 the war came on and he (Dr. S.) went into the Northern army and camp hospitals in all the departments, East and West, to study

1. MEASLES.
2. MALARIA.
3. CHRONIC DIARRHŒA.

At Philadelphia he worked in connection with Dr. Hayes, the Arctic explorer.

**1.** *Measles.* — The results he attained in regard to *measles* were published in "The American Journal of Medical Sciences," July and October, 1862. (See Appendix B.)

**2.** *Malaria.* — The results he attained in the study of *malaria* are published as follows : —

A. American Journal of Medical Sciences. 1866.

B. Revue Scientifique. Paris. November, 1869.

C. Scientific American Supplement. 1883.

D. *Malaria. McNaughton Prize Essay* awarded by the Albany Medical College Alumni Association. New York. William A. Kellogg. 1885. (See Appendix C.)

**3.** *Diarrhœa.* — The results he attained in *camp diarrhœa* were reported to the Ohio Surgeon-General in 1863, and were published by the latter in 1864.

This report is out of print, but may be found in the United States Medical Library at Washington, D. C.

At first Dr. Salisbury had no idea of the real nature of the disease (camp diarrhœa), but, in common with others at that time, supposed it was due to malaria and to drinking bad water.

He was surprised at learning from his observations that chronic or camp diarrhœa was essentially "*consumption of the bowels*," and the same as the so-called "hog cholera."

In the above report he traced it to a too exclusive use of amylaceous food, and proposed a new army ration by which chronic diarrhœa might be avoided, which, to repeat, he found in 1858 was due to the feeding too exclusively on fermenting and too acid yeast foods, to wit, starchy and sugary food in an advanced state of vinegar fermentation.

(See list of unpublished works in Appendix E.)

# FOOD STUDIES.

## EXPERIMENTS AT CAMP DENNISON MADE BY DR. SALISBURY TO SHOW THE BASIS OF HIS PROPOSED NEW ARMY RATION.

After finishing his observations on measles, malaria, and diarrhœa in the Federal Army, at the order of the proper authorities, a ward (No. 30) at Camp Dennison, United States Army Hospital, capable of containing thirty patients, was cleared, cleaned, and put in good order.

Surgeon Palmer was put in charge and was detailed to report to Dr. Salisbury at the end of each month. Nineteen (19) cases of chronic camp diarrhœa were placed in the ward, which cases were regarded as bad and obstinate, if not incurable.

They were all put on broiled beekfsteak and coffee, with anti-fermentative medicines.

At the end of (28) twenty-eight days, Dr. Palmer reported through Dr. B. Cloak, surgeon in charge of hospital, as follows (see Ohio's Surgeon-General's Report, 1864, at the Army Medical Museum, Washington, D. C., p. 77):—

Dennison U. S. A. General Hospital,
Camp Dennison, Ohio, Dec. 20, 1863.

Dr. Salisbury:

*Dear Sir,* — I enclose you Dr. Palmer's report of the diarrhœa ward. The treatment is highly satisfactory. Let us hear from you.

Truly your friend,

B. CLOAK,
*Surgeon in Charge.*

DENNISON U. S. A. HOSPITAL,
Dec. 17, 1863.

*Sir*, — The following is a report of those cases of camp diarrhœa examined by you (the details are omitted here). I am pleased with the use of an albuminous diet in chronic diarrhœa. It undoubtedly has had much to do with the successful treatment of the above cases. I like it far better than the farinaceous. All the cases were confirmed chronic diarrhœa. The results met my expectations. An improvement was manifest in every one of the nineteen cases; the transfer board for the invalid corps has just examined Ward 30, and taken several of the number for first and second battalion duty, so that I will be unable to report further. A few will be fit for their regiments. Hoping to hear from you soon, I remain, most respectfully,

Your obedient servant,

CHAUNCY B. PALMER,
*A. A. Surg. U. S. V.*

DR. SALISBURY.

The meaning of this is that "there were no deaths, and so many were cured in the ward, that the surgeon had not material enough to report on, after less than one month's diet on beef and coffee."

## ARMY RATIONS.

The United States Army authorities were so much pleased and impressed with the favorable results just given, that they asked Dr. Salisbury to get up an army ration. Hence he went to Cincinnati, and hired six (6) laboring men to board with him, living on army biscuit and coffee.

In the course of nineteen days they all had "consumption of the bowels," or "chronic diarrhœa," himself included, as he ate and lived with them, in order to see that his discipline was kept up. Each had, on an average, six to thirty stools a day. Some more, some less.

Rochelle salts were given to clear out the fermenting matter (this should not be done in old cases), and then they

were boarded on beefsteak and coffee; in a very short time they were comparatively well, simply by removing causes.

After this he proceeded to the establishments for manufacturing desiccated foods, which were located in New York City, to see their processes and what arrangements could be made for the supply of an army ration. He inspected the manufactories, and reported to the Surgeon-General of the United States Army at Washington, who ordered supplies of the rations suggested by Dr. Salisbury.

Arrangements were nearly completed when Richmond fell, the war was over, and the new army ration was abandoned. At the same time Prof. Horsford, of Cambridge, was engaged on this army ration, working by himself and in his own way at Washington, but when he saw Dr. Salisbury's report he wrote, "You have hit the nail on the head," gave up his researches, and went home.

## DISEASES FIRST CURED BY DR. SALISBURY ON UNCHOPPED BEEF.

1858.

*Consumption of the lungs.* — See unpublished work on *Consumption, its Causes and Cure.* Ready for the press in 1867. J. H. Salisbury, M. D.*

1863.

*Consumption of the bowels or chronic diarrhœa* was cured on unchopped beef in 1863.

## CHOPPED BEEF. — 1865.

First use of beef pulp to cure a case of disease was made in this year, 1865.

Diet card for Bright's disease was published by Dr. Salisbury in 1865.

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*This work is to be published soon by W. A. Kellogg, New York.

The first case of disease cured by the chopped beef or beef pulp was one of an ovarian tumor that was removed by this diet, 1865.

See unpublished paper entitled "Causes and Treatment of Goitre, Cretinism, Ovarian Tumors, and other Diseases." Ready for the press; 1863. Dr. J. H. Salisbury.

### Uterine Fibroids.

1865.

The next case cured by the use of chopped beef was one of uterine fibroid.

See paper entitled "Food as a Medicine, in Uterine Fibroids." American Journal of Obstetrics. New York, 1877.

1867.

### Chopping the Beef by Hand.

In 1867 the beef pulp was obtained by taking clear steak, stripping off the fat, fascia, and bone, placing it on a board, or in a chopping tray, chopping with a dull knife edge on one side of the steak, then with hand or spoon scraping off the pulp. Next the other side of the steak was turned up and subjected to the same process.

The scraped pulp was then moulded by the hand into cakes like fish-balls, one to one and a quarter inches thick, and about three inches in diameter; it was then broiled moderately, and while hot seasoned with black or red pepper, butter and salt, and eaten immediately.

In this preparation the white connective tissues were picked out by hand as carefully as possible. Where time is of no object and help is plenty, this hand process answers very well, and was used by Dr. Salisbury until the next improvement was realized in

1874

by the use of machines.

### Chopping the Beef by Machine.

After trying many machines, the American meat chopper, manufactured at Athol, Mass., was found in 1874 to be the most efficient, no other machine removing the connective fibrous tissues perfectly. Save the Enterprise and the Hale choppers, all others were found useless.

The first case cured by machine-chopped beef, or beef pulp, was one of fibrous consumption in 1874.

The American Meat Chopper is recommended by Dr. Salisbury in all excessive formations of fibrous tissues where they do not belong naturally; for example: sclerosis, locomotor ataxy, fibrous consumption, goitre, uterine fibroids, ovarian tumors, cancer, fibrous thickening of air passages, as in asthma, etc.

Uses of the Enterprise and Hale Choppers, which partially remove the connective fibrous tissues. They answer nicely in consumption of the lungs, consumption of the bowels, all diseases of fatty degeneration, Bright's disease of the kidneys, Bright's disease of the lungs, fatty heart and other muscles, fatty liver and other organs, obesity, cataract, arcus senilis, apoplexy, hemiplegia, paresis, partial paralysis, dyspepsia, diabetes, nervous prostration, etc.

### REMARKS.

The experiments previously alluded to showed that adult man can exist and thrive indefinitely on lean beef pulp and hot water. The stomach is purely a lean meat digesting organ. When too much food from the vegetable kingdom is eaten, the bile is sent to the stomach to digest it. It is the peculiar office of the bile to digest vegetable food. When bile is detected in the stomach, the condition is called "biliousness," but it is merely an effort of nature to right a physiological wrong done. The vegetable food and the fibrous

connective animal tissues in excess in the stomach undergo fermentation. Carbonic-acid gas, alcohol, and after a time acetic acid (vinegar) are developed by the growth of the alcoholic and vinegar yeasts feeding on the vegetable food and animal connective tissues, in the alimentary canal and stomach especially. These cause, by the action of the carbonic-acid gas mainly, a paralysis of the stomach, also the formation of animal tissues in the condition of partial weakness and death, as seen, for example, in the thickening of the large intestines in chronic diarrhœa. The diarrhœa that accompanies these conditions is due to the catarrhal pouring forth of the intestinal juices, and to an effort of nature to remove the offending matter.

The eliminating glandular organs also are partially paralyzed. They do not properly organize their eliminations. They increase in size, and the thickened fibrous tissues, make up much of the bulk of the enlarged viscera.

The production of the chemical agents known as alcohol and carbonic acid (carbonic di-oxide) are prime factors in the production of the paralyzed catarrhal conditions. The yeast fermentation of the food from the vegetable kingdom, and the connective fibrous animal tissues, is best avoided by removing them from the field of operation, as one would render a gun harmless by drawing the charge.

### Why are the Connective Fibrous Tissues removed from the Beef Pulp?

To repeat, *First.* Because they are subject to fermentation and produce carbonic-acid gas, the same as food from the vegetable kingdom does.

*Second.* Because fibrous tissues of animal food are special food for animal fibrous tissues.

*Third.* Because the pulp acts by starving out the fibrous connective glue or colloid tissues.

*Fourth.* Because experience shows in hundreds of cases that fibrous growths in from one to three years are removed more or less completely, and because a return to animal food, which retains the connective fibrous tissues, will be followed by the return of the diseased fibrous growths in the trespasser.

*Fifth.* Because the beef pulp is not subject to the acetic fermentation and the evolution of carbonic-acid gas, and hence it does not cause diseases of fatty degeneration and paralysis, which the absorption of carbonic-acid gas produces.

*Sixth.* Because the advantages of chopped defibrinated beef when broiled are

(*a*) Its easy digestion.

(*b*) Its rapid absorption.

(*c*) Its forming all the body tissues in a healthy manner.

(*d*) Its being a speedy builder up of the blood.

(*e*) Its clearing out abnormal vegetations from the blood and urine.

(*f*) Easy to swallow.

(*g*) Usually acceptable to the palate.

(*h*) Even when administered against the appetite, it has saved life.

(*i*) It is never too heavy or too rich a food for the weakest patient, as ordinarily thought. This idea is one of Satan's, and has killed many.

*Seventh.* When liquid foods alone can be taken, beef essences and teas should be made from beef freed from the connective fibrous tissues, of which Johnston's beef extract is the best example known at present.

## Why Broiled?

The object of cooking the beef is to render it more soluble in the stomach than the raw beef.

When the beef is *fried* it is raised to a temperature of boil-

ing fat, about four hundred degrees (400°) Fahrenheit. This heat abstracts the water from the beef and makes it hard and dry, and hence it is more indigestible. (See Appendix D for case illustrating this.) But the chief objection to frying is that the beef is not ventilated, and there is no chance for the escape of the products of the destructive distillation at so high a temperature.

Broiling coagulates the albumen and makes the meat juicy and tender, because not subjected to so high a heat as in frying. Roasting in the open air is equivalent to broiling, which is a mode of cooking where there is ventilation; to repeat, ventilation is necessary for cooking. When cooking in closed vessels or envelopes is adopted, it is found detrimental to the quality of the result, causing the food to become sometimes purgative and irritating to the alimentary canal.

### Polarized Light and Cooking.

Another effect of broiling is to cause the pulp to cease to polarize light, showing a radical, physical change in the structure.

Never Broil the Meat dry, lest it becomes Indigestible as in frying.

### Never eat the Chopped Beef Raw.

Some have called the Salisbury Plans, even in the judicial court room, "raw beef and hot water." But these are not the Salisbury Plans, and never were. Dr. Salisbury says he *never ordered a mouthful of raw meat*, for the following reasons: —

*First.* Because raw meat does not digest well, and the morphology of the fæces where raw meat has been eaten shows it to be not well digested.

*Second.* To avoid tape-worms, which are found in beef as well as in pork and game. Abyssinia is said to be the

country of tape-worms. Travellers report that the practice there is to drive kine to the doors of the kraals, cut morsels of beef from the live animals in such a way as not to destroy life. The raw and quivering morsels are eaten at once, being considered as choice dainties.

### How to broil the Chopped Beef or Beef Pulp.

1. *By gas stove.* (Goodwin's "Sun-dial" No. 1, Gas Stove.) — In this stove the flame is placed above the meat. Hence there is no danger of burning, or over-cooking, or of melted fat taking fire by dropping on the flame, unless one is very careless. The gas pressure is readily regulated so that a uniform heat can be had at all times. This cannot be said of common ranges or stoves.

Where cooks are poor or careless, or where people have to do their own cooking, these gas stoves are a desideratum; they can be used in the chamber where the patient is, in cases of necessity, as there is no odor of cooking. An unskilled person can soon use them. For example, a lady with a fibroid, not being a cook, was dismayed at the idea of cooking the beef herself, which she was compelled to do; but when I caused a gas stove to be set up, she had no trouble whatever, and reports her beef splendidly cooked all the time. It avoids the smudge of common cooking. Care must be taken to have a sufficient head of gas to fill the burners.

2. *Broiling with kerosene oil stoves.* — These give a uniform heat. The beef is placed in a fine wire toaster or broiler, held over the flame and turned over frequently till cooked. These stoves answer the purpose nicely, but they are liable to give forth bad odors from the burning fat falling on the flames, and from the carelessness of persons in allowing oil to fall on the stove when it is filled. The gas stove is free from these faults. A kerosene stove is merely

a great lamp. It should be kept and filled with the same care as a parlor lamp. The "Florence" is the best, in my opinion. The Florence Company has also made a grate broiler which prevents all drip.

3. *Cooking stoves and ranges.* As every one knows, the objection to them is in the difficulty of obtaining and maintaining an even heat. A fire of live coals or coal without blaze is wanted, and the beef pulp is placed, for purposes of ventilation, in a fine wire broiler or toaster, and exposed, not close enough to burn, and turned over from side to side frequently till cooked without burning or charring.

4. *Broiling under grate.* Here the grate burns coal and has an open space eighteen to twenty-four inches below it and above the floor of the hearth. The beef is exposed as in the case of the Goodwin Sun-dial gas stove. It is an admirable, but expensive, mode of cooking. Of course the live coals in the grate must be well stirred with a poker before use, so that no ashes will fall on the steak while it is broiling.

*Roasting before a fire in an old-fashioned Dutch kitchen* answers very well.

5. *Charcoal fire cooking.* In this mode the smoke is done away with. On the Fall River line of steamboats and in the best hotels, Porter House steaks are cooked over charcoal. This procedure is probably the best mode of cooking, as the thickest steak can be cooked through without burning. I should think there might be devised in portable form (after the French mode of cooking) a small charcoal furnace, about six inches square, so that with a handful or two of charcoal enough steak could be cooked for one patient. It is necessary only to get the charcoal into a glow to produce the chemical and physical changes sought for in cooking in the best manner.

"Always broil slowly and moderately well over a fire free from blaze or smoke."

How to use the American Chopper (see page 10).

This machine has its knife attached to a walking beam, and plays in a tin drum open at the top, but having a thick board at the bottom. The drum rotates on an upright shaft attached to the bed-plate of the machine. The other end of the walking beam is attached to the shaft, on which is a balance wheel and a geared crank shaft. The foregoing is set in motion by turning the handle of the machine. The beef must be first freed from fat, fascia, or bone, and it is then placed in the form of cubes or in masses as large as the hand on the board of the drum. The knife should be gauged so as to barely touch the board at the bottom of the drum. When the crank is turned the knife drives the white connective fibrous tissue down on to the board, and as the drum is made to rotate slowly the knife cuts in a new place each time it descends, and the pulp *only* appears on the surface after a few minutes of chopping. The machine is then stopped and the pulp is scraped off with a large iron spoon or with a clean hand, and collected until enough is obtained to mould into cakes like fish-balls, ready for broiling. Mould very lightly, and do not press the pulp too tightly together, as it will become livery and elastically tough and unpleasant to the touch and taste.

The American meat chopper is *par excellence* for chopping the beef, but at the same time it is a most wonderfully successful contrivance for making a noise like stage thunder, that will annoy not only the household where it is used, but also wake up the whole neighborhood.

The following means may be used to obviate the noise of this machine: —

Placing the machine on a bed of earth, or bag of meal, sawdust, or sand; it may be placed so the bed-plate will rest on the seat of two cane-seated chairs, or on a bin of saw-

dust; or, when placed on a table with four legs, four empty nail casks can be filled with sawdust or sand four inches deep. Next a board, one inch thick and six inches square, is put in each cask. The table is placed so that a leg rests on the board in each cask. The casks are then filled with sawdust.

It is to be hoped that the makers of this machine will improve it, as it is liable to be superseded any day, on account of the noise it makes, arising from its imperfect mechanical construction.

### How to clean the Chopper.

Simply remove the pins from the ends of the walking beam and then the knife and drum can be removed and washed. The machine should be oiled frequently, as the friction of the unoiled machine soon wears it out. It should be cleaned thoroughly immediately after using, and cared for like a sewing machine and kept in good order at all times.

### How to use the Enterprise Machine (see page 10).

The beef should be first freed from fat, fibre and bone, then cut into one or two inch cubes, fed into the hopper while the crank is being turned. The meat should go through three (3) times. The Enterprise comes between the American chopper and the whole unchopped steaks. It has the advantage of mechanical subdivision, and hence digests easier than whole steaks. The machine should be taken apart and thoroughly cleaned immediately after using.

### How to use the Hale Chopper (see page 10).

The selected and prepared beef is cut in small pieces and put into the chopper, turning the crank at the same time. About one third of the beef that first escapes will be found comparatively well freed from the white connective fibrous

tissue, and may be preserved for moulding into cakes for eating. The machine has to be repeatedly opened, freed from the engaged fibre and the meat run through four or five times. The product is moulded and cooked as in the case of the American meat chopper. This machine is noiseless and has the advantage of not disturbing the whole neighborhood.

### Selection of Beef.

This is a matter of prime importance and needs personal supervision, for butchers are human and forget their promises, often foisting on the poor patient imperfectly selected beef, to the patient's harm.

Beef should be used from the middle or top of the round of healthy, large, and well-fatted bovines that are from four to six years old. It should not be too recently killed, or tough, else the pulp will be leathery or livery (like liver); this latter condition also comes from pressing the pulp too firmly together. Dr. Salisbury ascribes this livery condition sometimes to the diffusion of the gelatine through the muscular tissues, caused by keeping the beef too long. The beef should not be kept more than three or four days after butchering.

## DIARRHŒA.

Diarrhœa may be caused by eating the chopped beef or pulp prepared from animals that have been overdriven before death, by under-cooking, and by beef being kept too long before use. The beefsteaks cannot be kept like the roasting pieces.

### Critical Cases.

When cases are critical too much care cannot be bestowed in the selection of beef, as the difference between life and death may lie between tender and tough beef. Some engage a butcher who caters to the poor, and pay him extra for his choice pieces of steak.

The Fall River line, alluded to, pays twenty-eight cents per pound for their Porter House steaks. How the hotels do it is seen by the following extract taken from an article on hotels, by Mr. George Iles, in the "Century," August, 1885 :—

"Having frequently wondered at the unvarying excellence of the beef at the leading hotels of New York, I made it my business to call on the butcher who supplies the principal houses. He makes two very different kinds of contracts, one supplementing the other nicely. His customers are hotel keepers and prison superintendents. Thus the difficulty is overcome, which, in a small city, prevents a butcher from supplying a hotel with as many choice cuts as it wants. But the metropolitan purveyor, by cultivating the trade of the criminal classes, is enabled to cater to the best travel in the country, as he finds sale for the remainder of the carcasses at eight to twelve cents per pound, having sold the selections for twenty-eight cents per pound."

### Serving the Chopped Beef.

Put it on a hot-water plate, as it cools rapidly. Season to taste with pepper, salt, Worcestershire, Halford, or Chutney sauces and butter. Avoid butter in Bright's disease.

## APPENDIX A.

NORMAL PROPORTION OF FOOD FOR MAN. — TWO THIRDS FROM THE ANIMAL KINGDOM, AND ONE THIRD FROM THE VEGETABLE KINGDOM.

In the following the writer has committed himself to this proportion of food as laid down by Dr. Salisbury: —

1. *Food as a medicine in agalaxia.* — "American Journal of Obstetrics," New York, October, 1877.

2. *Diet list for lactation according to the Salisbury Plans.* — "Michigan Medical News," Aug. 25, 1880.

3. *Feeding of nursing children.* — August, 1880, "Virginia Medical Monthly." He has never known a nursing mother to fail of a supply of milk when she faithfully followed these plans.

The following is a striking example of a case: A primipara with twin sons, suckling both entirely. At the age of six months one weighed seventeen pounds, and the other weighed eighteen pounds, while the mother gained ten pounds in weight.

Miss V. M., a Bostonian, married and went to the State of Maine to live. In time she bore twin sons. Being of small but perfect stature, and weighing less than one hundred pounds, she was strongly advised by the good matrons of the neighborhood not to attempt to suckle them at all, on the ground that she would not have milk enough, and would hence be obliged to wean them prematurely, and that if she used the bottle from the start there would be no unpleasant change for them and her to undergo. Now, Mrs. I.'s father lost his only son with scarlet fever, and like most new grandfathers who accept the situation which they are placed in by circumstance[illegible] their control, he manifested a deep interest

in the welfare of his grandsons. He was much distressed at their prospective agalaxia, and applied to the writer, saying, "Can't my daughter nurse those twins?" "Yes," I replied. "How?" said he. "If you will agree to see that the plan I may suggest is carried out, I will give her a diet list which will furnish milk enough for both," I replied. "I will see it is carried out," said he; "please send her the list." I did so. He did as agreed. The result was that Mrs. I. suckled her twins, and they had no other nourishment. At the age of six months one weighed seventeen pounds, and the other weighed eighteen pounds, while the mother gained ten pounds above the ninety-six pounds she weighed before.

The following is the list corrected which was given to her. It is reproduced from the "Michigan Medical News," Aug. 25, 1880:—

## DIET LIST FOR LACTATION ON THE SALISBURY PLAN.

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BY EPHRAIM CUTTER, M. D., BOSTON, MASS.

Member Gynæcological Society of Boston; Victoria Institute, London; etc.

Aliments include air and drinks. Food should be pure, seasonable, healthy, properly cooked, regularly taken, and liberally eaten. Besides the æsthetic view of food there are the chemical,— kinetic,— physiological, pathological, and therapeutical. Common sense estimates include all these. As the object of lactation is a plentiful supply of milk that answers to the above standards, the nursing mother should not allow love of the beautiful alone to select her food. While food should not offend the senses, it should contain all the elements found in the infant's body, be rich in blood, nerve, bone, muscle, vascular, glandular, respiratory elements. In other words, as we feed kine for milk, birds for health, and horses for work, by giving them their natural food, so we should feed nursing women on their natural food, to wit, two thirds animal, and one third vegetable (Salisbury). Besides, it would be better to live on the diet during gestation.

*Fourth.* Because experience shows in hundreds of cases that fibrous growths in from one to three years are removed more or less completely, and because a return to animal food, which retains the connective fibrous tissues, will be followed by the return of the diseased fibrous growths in the trespasser.

*Fifth.* Because the beef pulp is not subject to the acetic fermentation and the evolution of carbonic-acid gas, and hence it does not cause diseases of fatty degeneration and paralysis, which the absorption of carbonic-acid gas produces.

*Sixth.* Because the advantages of chopped defibrinated beef when broiled are

(*a*) Its easy digestion.

(*b*) Its rapid absorption.

(*c*) Its forming all the body tissues in a healthy manner.

(*d*) Its being a speedy builder up of the blood.

(*e*) Its clearing out abnormal vegetations from the blood and urine.

(*f*) Easy to swallow.

(*g*) Usually acceptable to the palate.

(*h*) Even when administered against the appetite, it has saved life.

(*i*) It is never too heavy or too rich a food for the weakest patient, as ordinarily thought. This idea is one of Satan's, and has killed many.

*Seventh.* When liquid foods alone can be taken, beef essences and teas should be made from beef freed from the connective fibrous tissues, of which Johnston's beef extract is the best example known at present.

## Why Broiled?

The object of cooking the beef is to render it more soluble in the stomach than the raw beef.

When the beef is *fried* it is raised to a temperature of boil-

ing fat, about four hundred degrees (400°) Fahrenheit. This heat abstracts the water from the beef and makes it hard and dry, and hence it is more indigestible. (See Appendix D for case illustrating this.) But the chief objection to frying is that the beef is not ventilated, and there is no chance for the escape of the products of the destructive distillation at so high a temperature.

Broiling coagulates the albumen and makes the meat juicy and tender, because not subjected to so high a heat as in frying. Roasting in the open air is equivalent to broiling, which is a mode of cooking where there is ventilation; to repeat, ventilation is necessary for cooking. When cooking in closed vessels or envelopes is adopted, it is found detrimental to the quality of the result, causing the food to become sometimes purgative and irritating to the alimentary canal.

### Polarized Light and Cooking.

Another effect of broiling is to cause the pulp to cease to polarize light, showing a radical, physical change in the structure.

Never Broil the Meat dry, lest it becomes Indigestible as in frying.

### Never eat the Chopped Beef Raw.

Some have called the Salisbury Plans, even in the judicial court room, "raw beef and hot water." But these are not the Salisbury Plans, and never were. Dr. Salisbury says he *never ordered a mouthful of raw meat*, for the following reasons: —

*First.* Because raw meat does not digest well, and the morphology of the fæces where raw meat has been eaten shows it to be not well digested.

*Second.* To avoid tape-worms, which are found in beef as well as in pork and game. Abyssinia is said to be the

## APPENDIX C.

### Malaria. Prize Essay.

The committee of award remarked as follows on page 25 of the Proceedings of the ninth annual meeting of the Albany Medical College Alumni Association, March 1, 1882, Albany, Weed, Parsons & Co.: "The essay on malaria, signed 'Morphology,' is a report of elaborate investigations over a territory that covers half a continent in the minute growths which are found in the microscopic investigations of malarial disease. It is only for a few years that the scientific world has known of growths wide in their variety as the larger forms which make up so much of the sensible world. A field is opened, beside which we stand hesitating before we enter and master its secrets. The author of this essay has made investigations in the domain of the ultimate science of the age. His researches rank with and are comparable to those of Klebs, Tomasi, Pasteur, Koch, Cohenheim, Ecklund, and others. These men who carry the light into the new places do not always travel by the same road. It will need the progress of a near, but, as yet, future time to determine the questions of differences which arise between them, and your committee would award the 'McNaughton Memorial Prize' for the best essay on malaria to this which is signed 'Morphology,' in the opinion that it contains the requirements for this position, to wit, thorough study of the questions involved; minute, extensive, and patient investigations of the facts within the reach of skilful effort; and well-considered vouchers therein."

## APPENDIX D.

### Effect of Tough Beef.

*Case to show the effect on the urine of eating tough steaks for breakfast.* — A patient was on a diet of unchopped beef for uterine abscesses of a syphilitic nature, complicated with a fibroid. The urine was muddy and thick with a deposit of pus mucous corpuscles and epithelia. After two weeks the urine was clear as champagne and had no morphological deposit. Such a specimen voided before breakfast was brought for examination. She complained of the toughness of the steak she had had for breakfast. Curious to see if the toughness of the steak had affected the urine, I asked her to retire. She did so and brought a fresh sample of her urine, which presented exactly the same appearances as it did before she went on to treatment two weeks before. This is positive evidence to show that care must be taken to have the beef always tender.

# APPENDIX E.

## PUBLISHED WORKS AND PAPERS OF JAMES H. SALISBURY, A. M., M. D.

1. Analysis of Fruits, Vegetables, and Grains, N. Y. State Geological Reports. 1847-48-49.
2. PRIZE ESSAY. — Chemical Investigations of the Maize Plant in its various stages of growth, with the temperature of the soil at various depths, and that of trees in different seasons of the year. 206 pages. State Agricultural Reports of New York and Ohio. 1849.
3. Chemical Analysis of Five Varieties of the Cabbage. 1850.
4. Rheum rhaponticum. Chemical examination of the various parts of the Plant. 1850.
5. Chemical Examination of Rumex crispus. 1855.
6. Experiments and Observation on the Influence of Poisons and Medicinal Agents upon Plants. 1851.
7. Chemical Examination of the Fruit of five (5) Varieties of Apples. 1850.
8. Chemical Investigations connected with the Tomato, the Fruit of the Egg Plant, and Pods of the Okra. 1851.
9. History, Culture, and Composition of Apium graveolens and Cichorium intibus. 1851.
10. Some Facts and Remarks on the Indigestibility of Food. 1852.
11. Compositions of Grains, Vegetables, and Fruits. Ohio State Agricultural Reports. 1861.
12. Microscopic Researches, resulting in the discovery of what appears to be the cause of the so-called "Blight" in Apple, Pear, and Quince Trees, and the decay in their fruit; and the discovery of the cause of the so-called "*Blister and Curl*" in the leaves of Peach Trees; with some observations on the development of the Peach Fungus. Illustrated with six plates. Ohio State Agricultural Reports. 1863.
13. Chronic Diarrhœa and its Complications, or the Diseases arising in Armies from a too exclusive use of Amylaceous Food, with interesting matter relating to the Diet and Treatment of these abnormal Conditions, and a new Army Ration proposed with which this large class of Diseases may be avoided. The Ohio Surgeon-General's Report for 1864.
14. Something about Cryptogams, Fermentation and Disease. St. Louis Medical Reporter. February, 1869.
15. Probable Source of the Steatozoon folliculorum. St. Louis Medical Reporter. January, 1869.
16. Investigations, Chemical and Microscopical, resulting in what appears to be the Discovery of a New Function of the Spleen and Mesenteric and Lymphatic Glands. Do. August, 1867. 29 pages.

17. Defective Alimentation a Primary Cause of Disease. Do. March and April 1 and 15, 1868. 70 pages and two plates of illustrations.
18. On the Cause of Intermittent and Remittent Fevers, with Investigations which tend to prove that these affections are caused by certain species of Palmellæ. American Journal Medical Sciences. 1866. Also in Revue Scientifique. November, 1869.
19. Some Experiments on Poisoning with the Vegetable Alkaloids. American Journal Medical Sciences. October, 1862. 28 pages.
20. Discovery of Cholesterine and Seroline as Secretions in Health of the Salivary, Tear, Mammary, and Sudorific Glands; of the Testis and Ovary; of the Kidneys in Hepatic Derangements; of Mucous Membranes when congested and inflamed, and the fluids of Ascites and that of Spina Bifida. Do. April, 1863. 2 plates. 17 pages.
21. Remarks on Fungi, with an Account of Experiments showing the Influence of the Fungi of Wheat and Rye Straw on the Human System, and some observations which point to them as the probable source of Camp Measles and perhaps of Measles generally. Do. July, 1862. 1 plate. 20 pages.
22. Inoculating the Human System with Straw Fungi to protect it against the contagion of Measles, with some additional observations relating to the influence of Fungoid Growths in producing disease, and in the Fermentation and Putrefaction of Organic Bodies. Do. October, 1862. 8 pages.
23. Parasitic Forms developed in Parent Epithelial Cells of the Urinary and Genital Organs, and in the Secretions. With 34 illustrations. Do. April, 1868.
24. Remarks on the Structure, Functions, and Classification of the Parent Gland Cells, with Microscopic Investigations relative to the causes of the several varieties of Rheumatism, and directions for their treatment. 1 plate of illustrations. Do. October, 1867. 19 pages.
25. Microscopic Researches relating to the Histology and Minute Anatomy of the Spleen and Lacteal and Lymphatic Glands, showing their ultimate structure and their organic elements, of their highly interesting and important functions, with some remarks on the cause of ropiness of Mucus and the tendency of all healthy and many diseased cells to be metamorphosed into filaments. 1 plate. 34 pages. Do. April, 1866.
26. Description of two new Algoid Vegetations, one of which appears to be the specific cause of Syphilis, and the other of Gonorrhœa. With 16 illustrations. Do. 1867. Also *Zeitschrift fur Parasitenkunde.* 1873.
27. Geological Report of the Mill Creek Canal Coal Field. With one map and two plates. Published in Cincinnati, 1859.
28. Analysis, Organic and Inorganic, of the Cucumber. Cultivator, 1849.
29. Experiments on the Capillary Attractions of the Soil, explaining some important and interesting principles and phenomenon in Agriculture and Geology. The American Polytechnic Journal. 1853.
30. A New Carbonic Acid Apparatus. Do. 1853.
31. Analysis of Dead Sea Water. 1854.
32. Two Interesting Parasitic Diseases; one we take from sucking Kittens and the other from sucking Puppies. Trichosis Felinus and T. Caninus. Boston Medical and Surgical Journal, June 4, 1868. 6 illus. Also, *Zeitschrift fur Parasitenkunde,* Hallier. Jena., 1875.
33. Pus and Infection. Boston Journal of Chemistry. January, 1878.

34. Microscopic Examinations of the Blood and Vegetations found in Variola, Vaccine and Typhoid Fever. 66 pages and 62 illustrations. Published by Moorhead, Bond & Co., New York. 1868.
35. Vegetations found in the Blood of Patients suffering from Erysipelas. Hallier, *Zeitschrift fur Parasitenkunde*. 1873. 8 illustrations.
36. Infusorial Catarrh and Asthma. 18 illustrations. Do. 1873.
37. Analysis, Organic and Inorganic, of the White Sugar Beet. The Albany Cultivator. Oct., 1851.
38. Analysis, Organic and Inorganic, of the Parsnip. N. Y. State Ag. Report. 1851.
39. Ancient Rock and Earth writing and inscriptions of the Mound-builders, with a description of their fortifications, enclosures, mounds and other earth and rock works. 49 plates in the hands of the American Antiquarian Society, and only partially published in their transactions and in the Ohio Centennial Report. 1863.
40. Influence of the Position of the Body upon the Heart's Action. Am. Jour. Med. Scien. 1865.
41. Material Application of Chemistry to Agriculture. Albany Cultivator. 1851.
42. Analysis, Organic and Inorganic, of the several kinds of Grains and Vegetables. The Albany Cultivator. August, 1849.
43. Malaria. McNaughton Prize Essay. 1882. W. A. Kellogg, New York. 1885.
44. Diphtheria, its Cause and Treatment. G. A. Davis, Detroit. 3 plates of illustrations. 1884.

## UNPUBLISHED WORKS AND PAPERS.

1. Asthma, the various Forms of, and their Causes and Treatment. 3 plates of illustrations. Ready for press since 1866.
2. Consumption, its Cause and Treatment. 4 plates. Ready for press in 1867.
3. Hog Cholera, its Cause and Prevention. 1858.
4. Ultimate Structure and Functions of the Liver. 1865. 3 plates.
5. Ultimate Structure and Functions of the Kidneys. 1864. 2 plates.
6. Geological Report of the Coal Fields of Virginia and Kentucky. 1857. With maps and many illustrations.
7. Histology of Plants. Prize Essay. 65 illustrations. 1848.
8. Causes and Treatment of " Bright's Disease." 1865.
9. Causes and Treatment of Diabetes. 1864.
10. Causes and Treatment of Goitre, Cretinism, Ovarian Tumors, and other Colloid Diseases. 1863.
11. Causes and Treatment of Progressive Locomotor Ataxy. 1867.
12. Cause and Treatment of Fatty Diseases of the Heart, Liver and Spleen. 1864.
13. Cause and Treatment of Paresis. 1865.
14. One of the most Common Causes of Paralysis, with Treatment. 1867.
15. Microscopic Examinations connected with Spermatozoa and Ova, with contents of pollen Grains and modes of development of Zoosporoid Cells. 1860.
16. Cryptogamic Spores in the Tissues of the Living Animal. Their development in food one source of disease, and a cause of fermentation, gangrene or death and decay in organized bodies. 7 plates and 102 illustrations.

17. Description of several new species of Ascaridæ found on and in the human body, and a brief account of several new Entozoa. 2 plates and 30 figures. 1865.
18. Investigations connected with the Cause and Treatment of Paralysis of the Will, Paralysis of the Memory, and Paralysis of the entire Intellectual and Moral Faculties, causing a peculiar mental state and Insanity.

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## APPENDIX F.

### PARTIAL LIST OF PUBLICATIONS OF EPHRAIM CUTTER, A. M., M. D.

1. Case of Thoracentesis. Boston Med. and Surg. Journal. 1857.
2. Dr. N. R. Smith's Anterior Splint. Mass. Med. Society. Com. 1858.
3. Report on the Zymoses of 1857 as they occurred in the Middlesex East District Medical Society. Do. 1858.
4. Report on the Veratrum Viride, in connection with Truman Rickard, M. D., and W. Ingalls, M. D. American Journal Med. Sciences. Jan., 1858.
5. Do., do. 1860. Second Report.
6. Experiments with Animal Vaccination. B. M. and S. J. 1860.
7. On Kerosolene as an Anæsthetic. Do. 1860.
8. On the Laryngoscope and Rhinoscope. Do. Vol. LXIX., No. 20, page 389.
9. Veratrum Viride. London Lancet. 1862.
10. Veratrum Viride. Dublin Quarterly Journal of Medical Sciences. 1862.
11. Veratrum Viride. London Medical Sciences and Gazette. 1862.
12. Emploi Therapeutique du Veratrum Viride. Gazette hebdomadire de Med. et de Chemique. Paris, 1862. Also in pamphlet form.
13. Veratrum Viride. Rankin's Abstract. London, 1862.
14. Practical Uses of the Laryngoscope and Rhinoscope in Diagnosis. B. M. and S. Journal. Several papers. 1866–7.
15. Case of Aphonia cured by extirpation of a neoplasm on the vocal cords by laryngotomy. A. J. M. S. Oct., 1866. Remains so. 1886.
16. Apparatus for Bedridden Patients. Do. Jan., 1867.
17. On the Apparatus for the Nebulization of Medicinal Substances. M. and S. Reporter. Phila. Vol. XV., No. 3, page 60. Also Com. Connecticut Med. Society. 1866.
18. On the Contemporaneous Investigation of Therapeutical Substances. B. M. and S. J. 1863.
19. Case of the Nephritic Calculus Complicating Labor. B. Jour. Chemistry. 1867.
20. On the Attachment of Sponge to Metallic Bougies. Do. 1868.
21. Reports of the Midd. East District Med. Society. Several published. B. M. and S. J., 1857–68.
22. On the Normal Condition of the Eustachian Tube. Do. Feb., 1867.
23. Veratrum Viride as a Therapeutical Agent. Pamphlet. Riverside Press, H. O. Houghton & Co. Cambridge. 1862.

24. Modes of Administration of Systemic Anæsthetics. B. M. and S. Jour. Vol. LXXVI., p. 117.
25. Contribution to the Treatment of Retroversion of the Uterus. Do. Nov. 26, 1868.
26. On the Feasibility of Public Baths in Woburn. Middlesex Co. Jour. April 4, 1868.
27. How to Vaccinate with the Crust from Kine. B. Jour. Chemistry. Sept., 1868.
28. Carbolic Acid. Do. Oct., 1868.
29. Book Notice of Dr. Salisbury's Microscopic Examinations of the Blood. Do. Do.
30. Vaccine Virus from Kine. Do. Nov., 1868.
31. Coffee as a Deodorizer. Do.
32. About the Laryngoscope. Do. Do. Feb., 1869.
33. Benzoated Oxide of Zinc Ointment. Do.
34. A New Clinical Microscope. Do. April, 1869.
35. Extra Laryngeal Operation for the Removal of Growths upon the Vocal Cords. B. M. and S. J. Feb. 18, 1869.
36 & 37. Observations on the Illuminations in Laryngoscopy. B. J. C. June and July, 1869.
38. Another Parasite in the Pig. Do. Aug., 1869.
39. A New Metallic Suture. Do. Do.
40. Urethral Calculus. B. M. and S. J. Oct. 7, 1870.
41. Nasopharyngeal Polypus removed through the mouth by a modified ecrazeur. Illustrated. B. M. and S. Journal. Nov. 24, 1870.
42. Contribution to the Treatment of Hemicrania and Frontal Headache. B. J. C. Do. 1870.
43. Vaginometry. Gynecological Journal of Boston. Nov., 1871, p. 174.
46. Contribution to the Treatment of the Versions and Flexions of the Unimpregnated Uterus. Do. 1871. Published in pamphlet form 1872.
47. Do. Second Edition. Book form. J. Campbell & Son. 1876.
48. Thyrotomy Modified. Pamphlet. Do. 1872.
49. Phosphorus in Sleeplessness. B. J. C. April, 1872.
50. Odious Odors not always Noxious. Woburn Advertiser. 1871.
51. Water Question. Do. Do.
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